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COMPLETE SPECIFICATION.

Improvements in and relating to Door Fittings.

I, ROBERT DUNCAN, a British Subject, of 11/13 West Campbell Street, Glasgow. C.2, Scotland, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be described in and by the following statement:—

This invention has reference to door fittings.

A door stop is provided to limit the opening movement of the door and thereby protect the door and door fittings from damage. Usually a door stop is in the form of a rubber or like cylinder which is secured to the floor and which projects upwardly therefrom to contact with the foot of the door when the latter is opened. The most effective position for the stop is such that it contacts with the door near to the opening edge or locking stile of the door. Generally its position is such that it is not less than one third of the width of the door from the hinge side thereof. When the door is opened it abuts against the stop which acts as a fulcrum. The nearer the stop to the hinge side of the door the greater is the danger of damage to the door and its fittings. On the other hand the further the stop is from the hinge side of the door the greater is the danger of people tripping over it.

Where keepers are provided to retain the door in its open position they are in some cases secured to the floor to engage with the foot of the door.

It will be apparent that keepers secured to the floor and projecting upwardly therefrom constitute a danger in that people may trip on such projections.

The present invention has therefore for its object to provide improved door fittings, including a keeper by which a door can be retained in its open position and which will

not constitute a danger to people passing through the doorway.

According to the present invention a door is provided with fittings comprising a keeper sunk into the floor at a position remote from the hinge side of the door, a pivoted bolt carried by the foot of the door and which is lowered to co-operate with the keeper when the door is opened and a fixture in the form of a cam or ramp located at the hinge side of the door, the cam or ramp controlling the movement of the pivoted bolt.

The invention further consists in a door having fittings comprising a keeper sunk into the floor, a bolt pivoted to the foot of the door near the side remote from the hinge side, a rod operatively connected to said pivoted bolt and extending along the foot of the door to near the hinge side thereof and a cam or ramp positioned near the hinge side and which, when the door is being opened, actuates the rod to cause the pivoted bolt to engage the keeper.

The rod may be fulcrumed to the door near the hinge side thereof to form a two-arm lever with a shorter arm adjacent to the hinge side, this arm being connected to a runner or roller which rides on the ramp when the door is being opened so that the rod is thereby rocked about its fulcrum to cause the pivoted bolt to engage the keeper. Or the end of the rod adjacent to the hinge side may be arranged to engage a fixed cam when the door is being opened, the cam imparting a thrust which is transmitted to the pivoted bolt which then drops to engage the keeper.

Preferably the keeper is in the form of a trough to receive the pivoted bolt, the trough having a bridge towards one end thereof. When the pivoted bolt is lowered it enters one end of the trough and sweeps

any rubbish collected therein along the trough until it contacts with the bridge, the rubbish being discharged at the other side of the bridge.

5 Preferred embodiments of the invention will now be described with reference to the accompanying drawings wherein:—

Figure 1 is an elevation of the lower part of a plate glass door having fittings in accordance with the invention, the door being shown in its closed position;

Figure 2 is a section on the line 2—2 of Figure 1 and showing, in chain dotted lines, the door in its open position;

15 Figure 3 is an elevation, partly in section, to a larger scale of the foot of the door;

Figure 4 is an elevation of the lower part of the door stopped by the fittings in its open position;

20 Figure 5 is a section on the line 5—5 of Figure 4;

Figure 6 is a section on the line 6—6 of Figure 4;

25 Figure 7 is a view similar to Figure 6 but showing the door locked or held open by the fittings in its open position;

Figures 8 and 9 are views corresponding to Figures 1 and 4 respectively but showing an alternative construction of fitting in accordance with the invention;

30 Figure 10 is a section on the line 10—10 of Figure 8; and

Figures 11 and 12 are further views corresponding to Figures 1 and 4 respectively but showing a further alternative construction of fittings in accordance with the invention.

In the drawings like reference numerals denote the same or corresponding parts.

40 The invention will first be described with reference to Figures 1 to 7 wherein 10 denotes a plate glass door the foot of which is inserted in the upper channel 11 of an H channel bottom rail 12. The door is supported by means of a lower vertical pivot pin 13, and is also supported by an upper pivot pin, not shown. In the lower channel 14a is housed a rod 14 secured to a sleeve 15 rotatable on a pin 16 inserted through the bottom rail near the hinge side of the door. The extremity of this rod near the hinge side carries a roller 17. A wire spring 18 encircles said sleeve, one end of the wire bearing on the under side of the base of the bottom rail and the other end thereof engages the rod and tends to turn it in a clockwise direction as shown in Figure 3. The other end of the rod 14 is connected to a lug 19 projecting upwardly from the upper side of a pivoted bolt 20 rigidly secured to a pivot pin 21 extending between the two flanges forming the lower channel of the rail.

60 Secured to the floor at the hinge side of the door is a ramp 22 up which the roller 17 runs when the door approaches its fully open

position, which may be when it has been turned about 90°.

Sunk into the floor is a keeper in the form of a flanged trough 23 into which the pivoted bolt projects when the roller rides on the ramp. This trough is provided with a bridge 24 near one end thereof. 70

When the door is swung to its open position, i.e. from the closed position shown in Figure 1 to its open position shown in Figure 4, the roller 17, just before it reaches its open position, rides on the ramp and is thereby raised against the action of its spring 18. The rod is thereby rocked about its fulcrum, i.e. the pin 16, and turns the pivoted bolt 20 so that the latter projects into the trough 23. The pivoted bolt travels along the trough until it abuts against one side of the bridge 24, further movement of the door being thereby arrested, see Figure 6. 75 80 85

Should any rubbish accumulate in the trough it is swept by the pivoted bolt below the bridge 24 to emerge from the trough at the other side of the bridge.

When the movement of the door is reversed the roller 17 runs down the ramp 22 and the rod 14 is rocked to raise the pivoted bolt 20 clear of the keeper, the door being then free to close. 90

The position of the door when the pivoted bolt abuts against the bridge of the keeper is determined by the position of the ramp and the keeper. 95

As the ramp is positioned near the hinge edge or stile of the door and the keeper is sunk in the floor to be flush therewith there is no projection over which those entering and leaving the door can trip. 100

If desired the door may be provided with two ramps and two keepers, one of the ramps and a keeper coming into operation when the door is opened in one direction and the other ramp and keeper coming into operation when the door is opened in the other direction. 105

If desired the pivot pin 21 to which the pivoted bolt is rigidly secured may be provided with saw cuts or a hexagonal or square or recessed head or otherwise formed so that the pin can be rotated and therefore the pivoted bolt raised and lowered manually by means of a suitable tool, the end of the pivoted bolt having a claw which can engage both sides of said bridge 24, see Figure 7. When such pivoted bolt is raised and thereafter lowered to so engage the bridge the door is retained in its open position until the pivoted bolt is again manually raised. 110 115 120

The invention is likewise applicable to banks of doors positioned between two doorposts, each door being capable of rotating through 140° or more. 125

In the embodiment of the invention shown in Figures 8 to 10 the housing for the bottom pivot of the door is provided with a laterally 130

extending cam 22 and arranged to co-operate therewith is a roller 17 mounted on the end of the rod 14. The other end of the rod is connected to the lug 19 rigidly secured to the pivoted bolt 20 which is pivoted on a pivot pin 21 extending transversely of the bottom rail 12. The rod is encircled by a helical compression spring 25 one end of which bears on a collar 26 fast on the rod while the other end of the spring bears on transversely extending pins 27. A collar 28 fast on the rod limits the movement of the rod under the action of its spring. When the door is being opened, and just before it is fully opened, the rod 14 is displaced in a longitudinal direction against the action of the spring 25 by the roller 17 co-operating with the cam 22. This causes the pivoted bolt to turn about its pivot and engage the bridge of the keeper sunk into the floor. The pivoted bolt may be raised from its keeper by means of a key or other tool. When the door commences to close the spring moves the rod 14 to raise the pivoted bolt clear of the keeper. When the pivoted bolt engages the bridge it may be raised and then dropped to engage the other side of the bridge to retain the door open.

In the embodiment of the invention shown in Figures 11 and 12 the rod 14 is mounted in bearings 14a so that it can partake of a rotary movement about its own axis.

One end of the rod is cranked to engage with the cam 22 while the other end is cranked to engage with the end of the pivoted bolt 20. A blade spring 29 secured to the pivoted bolt and bearing on the base of the channel in which the rod is inserted tends to raise the pivoted bolt.

When the door is about fully opened the cam 22 co-operates with the adjacent cranked end of the rod 14 thereby turning the rod about its own axis. The other cranked end engages the pivoted bolt 20 to turn it about its pivot against the action of the spring 29, the pivoted bolt then engaging the keeper. When the door thereafter commences to close the pivoted bolt is raised clear of the keeper by the spring 29, the rod being rotated about its own axis to its initial position.

The housing may be provided with two cams and two sockets provided to receive the pivoted bolt, the cams and sockets being such that the door is held in its open position when opened inwards or outwards.

WHAT I CLAIM IS:—

1. A door having fittings comprising a keeper sunk into the floor at a position remote from the hinge side of the door, a pivoted bolt carried by the foot of the door and which is lowered to co-operate with the keeper when the door is opened and a fixture in the form of a cam or ramp located at the hinge side of the door, the cam or ramp controlling the movement of the pivoted bolt.

2. A door having fittings comprising a keeper sunk into the floor, a bolt pivoted to the foot of the door at the side remote from the hinge side, a rod operatively connected to said pivoted bolt and extending along the foot of the door to near the hinge side thereof, and a cam or ramp positioned near the hinge side and which, when the door is being opened, actuates the rod, to cause the pivoted bolt to engage the keeper.

3. A door having fittings as claimed in Claim 2 wherein the rod is fulcrumed to the door near the hinge side thereof to form a two-arm lever with a shorter arm, adjacent to the hinge side, this arm being connected to a roller which rides on the ramp when the door is being opened, the rod being thereby rocked about its fulcrum to cause the pivoted bolt to engage the keeper.

4. A door having fittings as claimed in Claim 2 wherein the end of the rod adjacent to the hinge side is arranged to engage a fixed cam when the door is being opened, the cam imparting a thrust which is transmitted to the pivoted bolt which then drops to engage the keeper.

5. A door having fittings as claimed in any of the preceding claims wherein the keeper is in the form of a trough to receive the pivoted bolt, the trough having a bridge towards one end thereof.

6. In or for a door, fittings therefor substantially as herein described and shown in Figures 1 to 7 of the accompanying drawings.

7. In or for a door, fittings therefor substantially as herein described and shown in Figures 8 to 10 of the accompanying drawings.

8. In or for a door, fittings therefor substantially as herein described and shown in Figures 11 to 12 of the accompanying drawings.

MARKS & CLERK,
Chartered Patent Agents,
Agents for the Applicant(s).

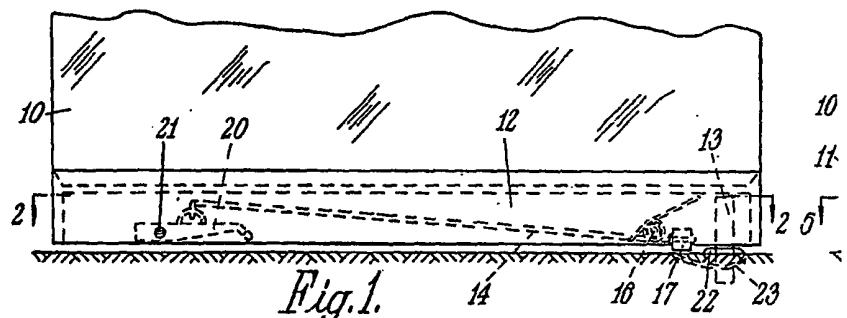


Fig. 1.

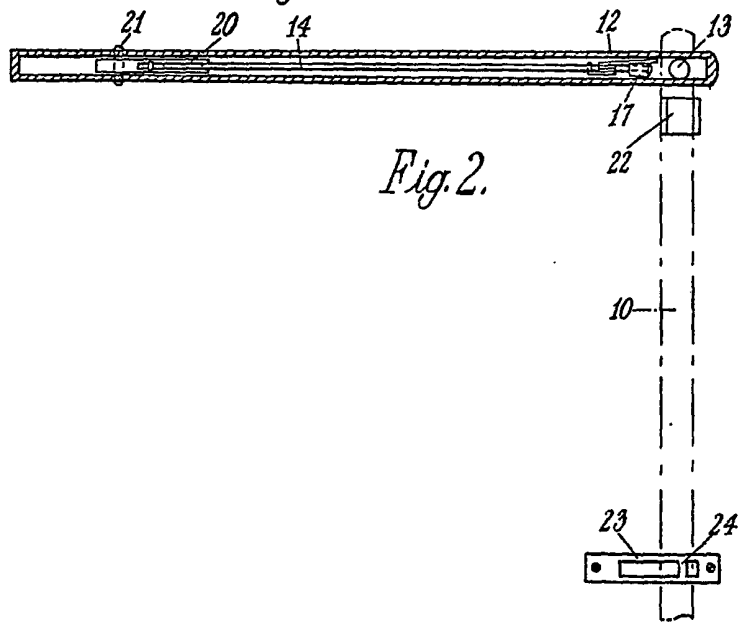


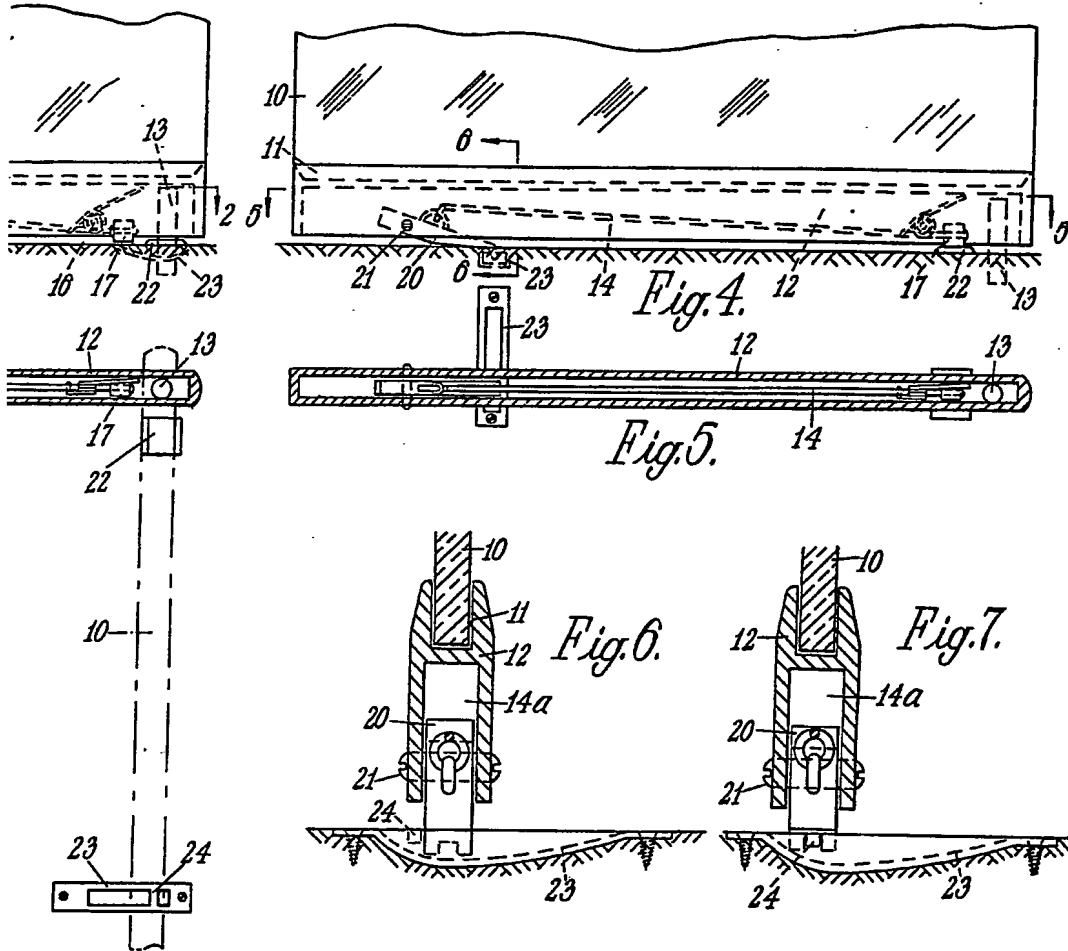
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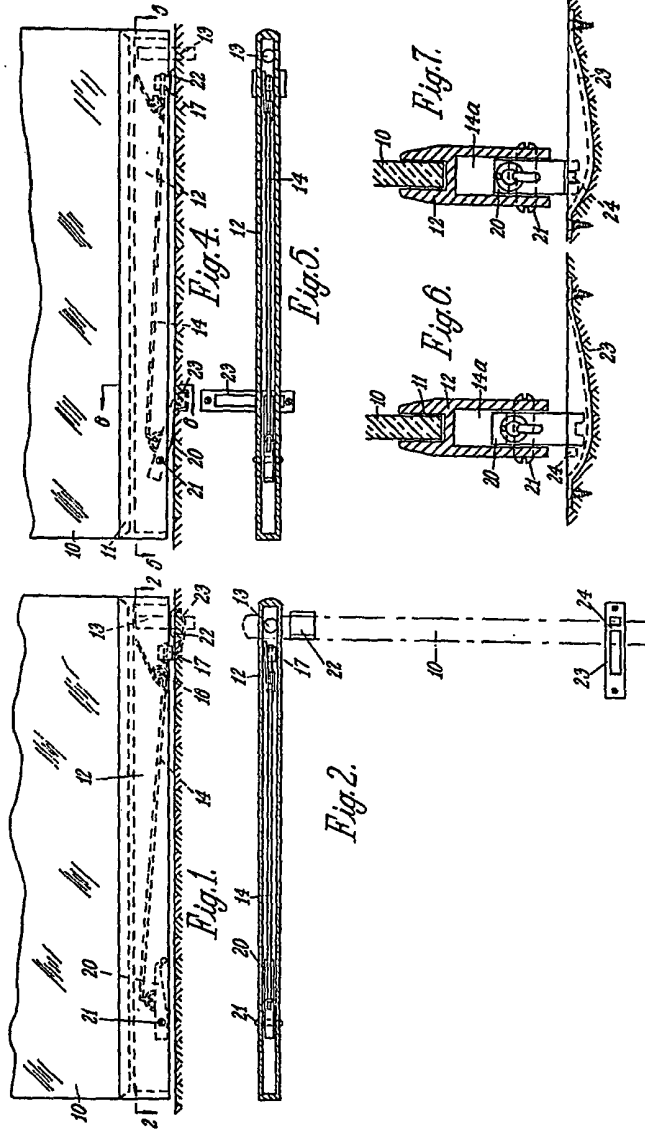
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COMPLETE SPECIFICATION

2 SHEETS

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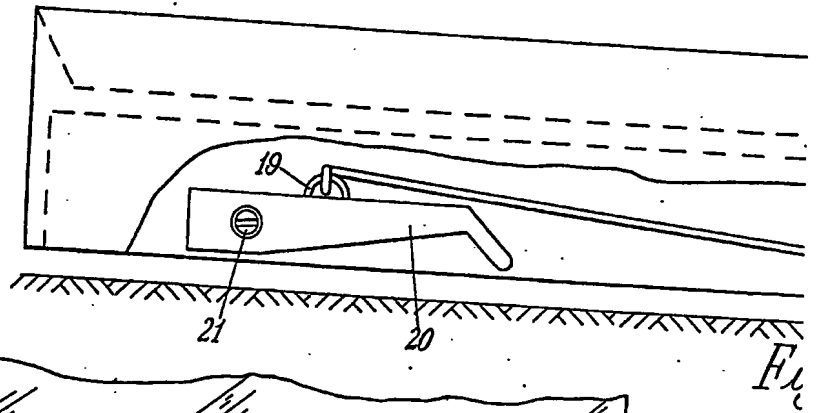


Fig. 8.

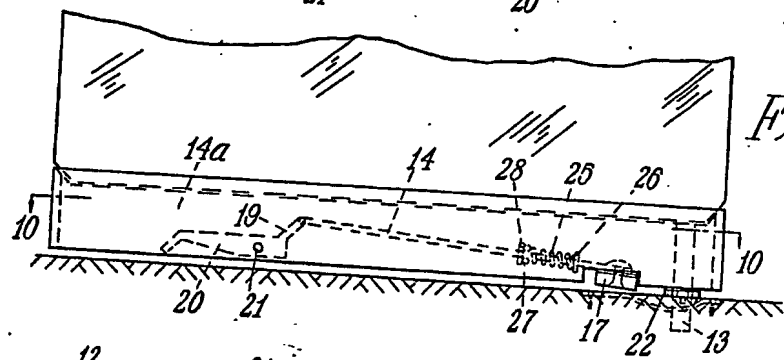


Fig. 9.

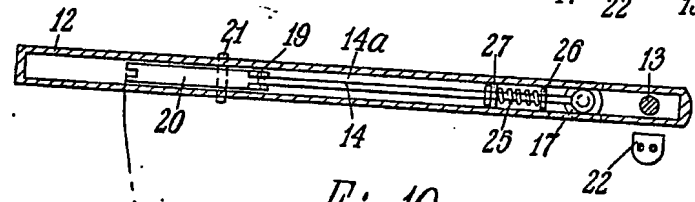


Fig. 10.

Fig.

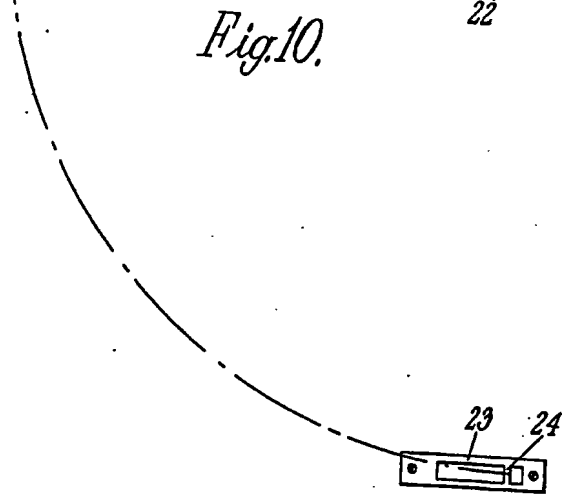


Fig. 1

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COMPLETE SPECIFICATION

2 SHEETS

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the Original on a reduced scale

Sheet 2

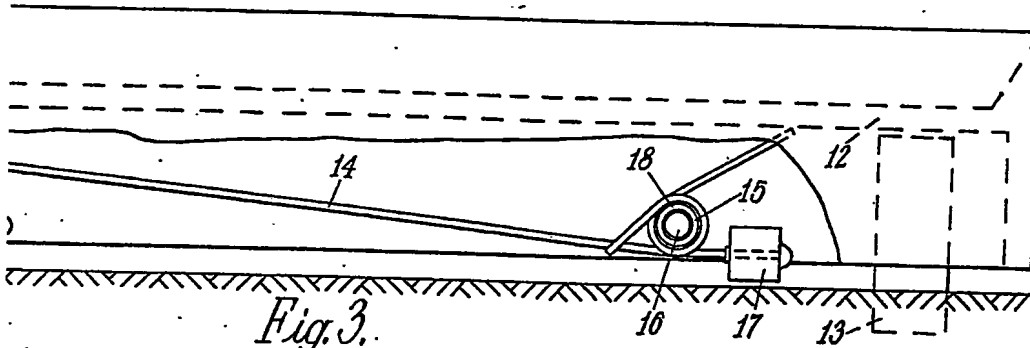


Fig. 3.

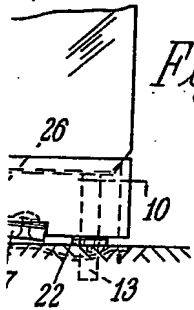


Fig. 8.

Fig. 9.

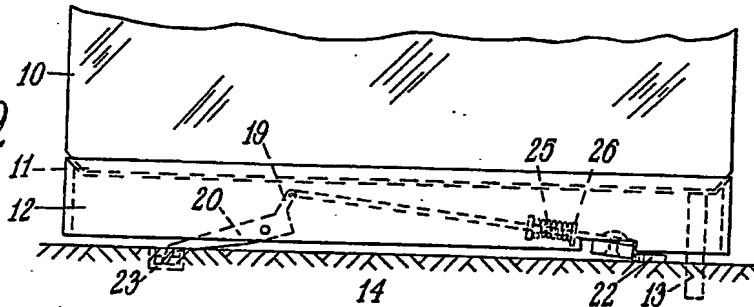


Fig. 11.

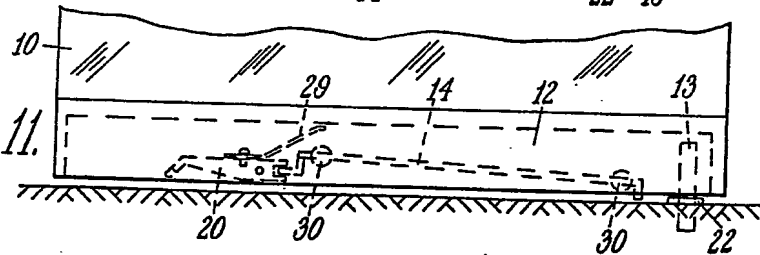
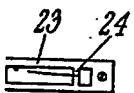
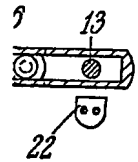
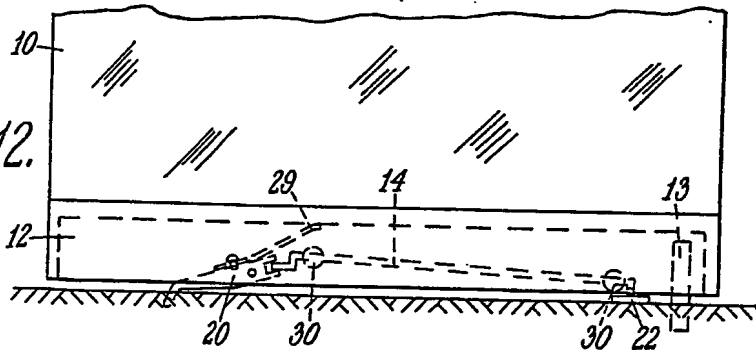


Fig. 12.



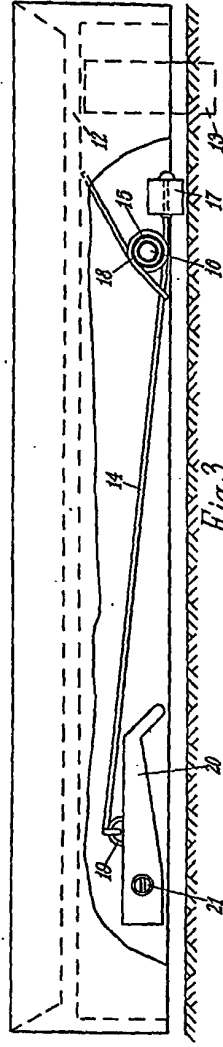


Fig. 3.

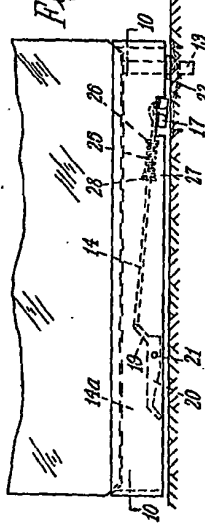


Fig. 8.

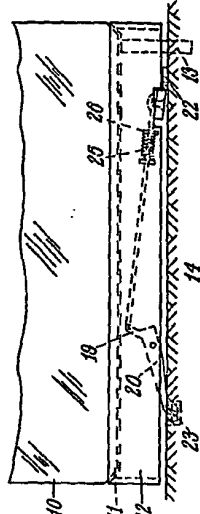


Fig. 9.

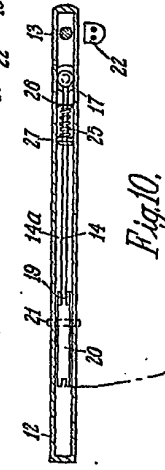


Fig. 10.

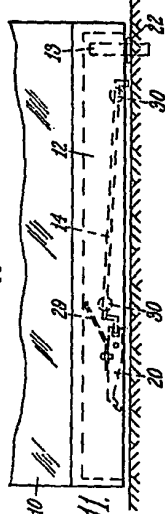


Fig. 11.

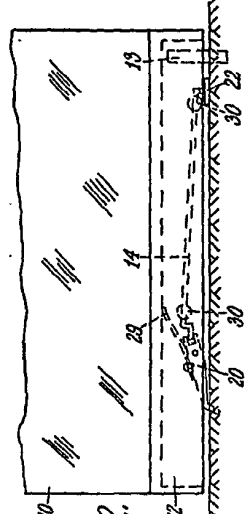


Fig. 12.

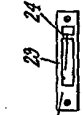


Fig. 13.